

CHAPTER 2 - AIDS TO NAVIGATION, NAVIGATION CHARTS, AND RELATED DATA

2-1. Purpose. This chapter establishes the procedures on aids to navigation, chart data, and publication of information on related USACE civil works water resources activities.

2-2. Background.

a. The USACE - by virtue of its lead role in construction, operations, and maintenance - often has primary source data for direct use by the marine industry as well as input to other agencies for use in carrying out their navigation missions. Besides construction and maintenance work itself, the USACE performs hydrographic surveys, publishes navigation charts for inland waters, evaluates and approves permit applications for Sec.10/404 work, and issues navigation regulations.

b. The U.S. Coast Guard (USCG) maintains the U.S. aids to navigation system and has mission responsibilities for management of vessel traffic. The USCG publishes the USCG Light List, and weekly Local Notices to Mariners (LNTM) with summary information on hazards, restrictions, aids to navigation changes, and National Ocean Service (NOS) chart updates. The USCG also broadcasts more time-sensitive Notices to Mariners by VHF-FM radio broadcast.

c. The National Ocean Service (NOS), under the National Oceanic and Atmospheric Administration (NOAA), prepares and publishes nautical charts for coastal (tidal) waters, the intracoastal waterways, and the Great Lakes; and publishes the U.S. Coast Pilot for these same areas for more detailed navigational information.

d. MSC/district commanders are responsible for preparing navigation charts for the inland waterways (those maintained by the USACE) which are not charted by the National Ocean Service (NOS).

e. Defense Mapping Agency (DMA) prepares worldwide nautical charts for Department of Defense use; for U. S. waters, coverage is essentially the same as NOS, and DMA works closely with NOS to share chart data. DMA also issues periodic Notices to Mariners for correction and update of DMA and NOS charts.

2-3. Guidance.

a. The USACE will provide information to the responsible agencies and minimize redundant publication of separate navigation information.

b. District commanders shall prepare channel survey/ condition reports from the results of each controlled survey, using ENG Forms 4020-R and 4021-R prescribed in Appendixes B and C for tabular reports. For coastal areas, a copy of the tabular reports and survey drawings/tracings will be forwarded within 60 days after completion to (see Appendix D for addresses):

(1) National Ocean Service (NOS)

(2) Defense Mapping Agency (DMA) - drawings only

(3) USCG District Aids to Navigation Office

c. Special reports shall be provided to the USCG and/or NOS for situations as outlined in Appendix E. Reports to the USCG will ordinarily be by telephone (within 24 hours - followed by hard-copy backup) where the information is time-sensitive for navigational use. Reports to NOS will ordinarily be by letter within 10 days.

d. Notices to Navigation Interests (NTNI) will use a distinctive format (see sample at Appendix F), and will highlight the waterway/state(s) affected.

(1) NTNI will be distributed by mail to appropriate USCG offices; other affected USACE elements; other affected Federal, state, or local agencies; port authorities; shipping companies and vessel operators; and other affected industry and public entities requesting copies. A limited/reasonable number of copies for each addressee will be distributed free of charge.

(2) A mailing list for NTNI will be maintained and updated at least annually.

e. The prompt dissemination of the latest detailed information concerning channel conditions is of utmost importance. Necessary measures will be taken to insure that such information is reported without delay simultaneously to the U.S. Naval Oceanographic Office, the USCG, the NOS and DMA. When a dangerous shoaling is found during the progress of a survey, information thereon will be furnished immediately to the abovementioned agencies, so that such information may be made available to mariners promptly, and buoys shifted to mark the shoal. Descriptions of any dredging or other operations in important channels in tidal waters, either in progress, and not already reported, or soon to be undertaken, together with a statement of the work and expected duration, will also be reported in order that Naval and other vessels may be warned to look out for dredges and other plant, temporary markers and lights.

f. District commanders having charge of improvements of harbors and waterways shown on charts of the DMA or of the NOS will send to both offices promptly, as ascertained for the correction of such charts, the following information: Descriptions of changes in channel location and depth, or of obstructions that may be discovered, with such prints and other information as may be necessary to permit the existing charts to be corrected to date. All maps should contain sufficient data to permit the fixed plane or reference, bench marks, base lines, etc., to be determined and located. The survey stations should be shown and, when no unreasonable expenditure of time or labor is involved, the map will show one or more triangulation station(s) of the NOS in such a way to facilitate connection of old or new work. The source of authority for the shoreline and topography should be stated on the map. The data supplied should indicate what charts are affected.

g. When any survey of areas covered by charts of the DMA or the NOS is completed, a print of each tracing will be sent direct to both the DMA and the NOS. It is not necessary that tracings be fully complete as to form and title when such prints are made. An informal manuscript title marked "Advance Sheets", and containing a description sufficient to identify the locality and the source of the map, will be sufficient.

h. Information relative to the improvement of harbors and waterways such as dredging operations, and precautions rendered necessary due to the presence of dredging or other plant will, when considered necessary, be brought to the attention of vessel owners or operators

regularly using the waterway. This will be done through issuing bulletins or notices by district commanders.

2-4. Cooperation with Coast Guard.

a. District commanders will consult with the USCG District Commander during design of channel and harbor improvement projects to discuss the aids to navigation requirements and all other facets of the projects that involve USCG responsibility. Project material furnished direct to USCG commanders will include: (1) Information as to the authorization by Congress of a project involving changes affecting aids, such as channel limits, breakwaters, including a copy of the project document; (2) The proposed operations on such projects during the next fiscal year, to be furnished annually on the release of the budget estimates; (3) Plans showing the final location of the channel limits or structures to be furnished at the time work is undertaken.

b. Changes in channel limits affecting navigation aids, made under general or specific provisions of the law, should be made the subject of a conference with the USCG District Commander. The Commander will be promptly informed as to the approval of such changes and the probable date of completion of the work.

c. USACE district commanders will furnish direct to the various USCG district commanders, for their immediate information, any facts which may come to their attention in connection with their duties which will be of benefit to the USCG in maintaining its system of aids to navigation. This should include statements as to the displacement of or defects in any such aids to navigation. It is recognized that, in some locations, the USACE does provide aids to navigation support to the USCG pursuant to formal MOU's between the two agencies.

d. If work involving harbor or channel improvements directly affects any existing aids to navigation or any structures of the USCG, USACE districts commanders will, when practicable, give notice to the USCG District Commander sufficiently in advance to permit taking steps deemed necessary by the USCG. If the USCG District Commander specifically requests that the affected structure be replaced, the USACE District Commander should inform the Commander, USCG of the estimated cost and the anticipated commencement and completion dates and the USACE District Commander will proceed with the work if so authorized by the Commander, USACE. On completion of the work, the USACE District Commander will promptly furnish the USCG District Commander, for settlement, an account of the expense incurred.

2-5. Navigation Aids of the Corps of Engineers

a. Whenever channel dredging or other channel improvements are being performed, necessary temporary markers, such as ranges and light poles, should be installed and maintained by the USACE District Commander pending the installation of permanent aids by the USCG. The USCG desires that information regarding aids to navigation installed or maintained by USACE district commanders in connection with harbor or channel improvement be furnished promptly. Such information is needed for inclusion in Notice to Mariners published by the USCG, on charts of the waters concerned, where desirable.

b. USACE district commanders will notify the USCG District Commander in every case where aids to navigation for marking works of harbor channel improvements are established or discontinued. Notice should be given of such aids as may be of use or interest to general navigation. Notice need not be given as to such buoys, lights, or fog signals as are of temporary

or unimportant character, or of importance only to the USACE. Omit also lights or fog signals on ferry slips and on piers used only by certain vessels, and stakes, bushes, and barrel buoys marking shallow and little-used channels.

c. In placing aids to navigation in connection with harbor or channel improvement works, USACE district commanders should see that they do not conflict in character or otherwise with other aids to navigation in the vicinity. USACE district commanders should confer with the USCG District Commander on this subject.

d. The USCG shall be furnished information, for publication, concerning markers installed as temporary aids to navigation, for new improvements, in advance of permanent aids, and other markers that may be established in connection with operations that may serve as important aids to navigation. Care will be exercised to see that all markers established are not misleading to general navigation and do not interfere with aids to navigation established by the USCG.

e. The necessary blank forms for reporting information regarding USACE aids will be furnished upon request by the USCG District Commander.

f. Colors of Dredging Buoys Established by USACE.

(1) In order to distinguish buoys placed and maintained by the USACE for dredging purposes from aids to navigation placed by the USCG, USACE working buoys will be white with the top two feet painted light green. The buoys need not be painted to achieve the proper color markings.

(2) If buoys with special markings are needed to indicate the different sides of the navigable channel, prior arrangements will be made with the USCG District Commander having jurisdiction.

(3) Information and regulatory marks are not considered aids to navigation. They shall conform to USCG standards where practical, however USACE standards in the Sign Standards Manual shall take precedence.

g. Information to be Furnished by the Corps of Engineers.

(1) District commanders responsible for harbors and waterways shown on charts of the NOS, will report the channel conditions promptly (as soon as possible), and as ascertained, using standard tabular forms to:

Director, Defense Mapping Agency
Navigation Information & Services
ST D44
4600 Sangamore Road
Bethesda, MD 20816-5003

National Ocean Service
Distribution Branch (N/CG33)
Riverdale, MD 20737-1199

District Commanders
U.S. Coast Guard

(2) Channel survey drawings furnished to the USCG are to include:

(a) Either NAD 83 or State Plane grids.

(b) Plots of the positions of aids to navigation.

(c) Written notations of the coordinates in NAD 83 or State Plane Coordinates of the fixed aids to navigation found during the survey.

(d) Soundings should be referenced to mean lower low water (MLLW) or other datum as appropriate.

(3) The standard tabular forms with illustrated data follow:

(a) For channels 400 feet wide and greater (ENG FORM 4020-R).

HARBOR _____ (State) _____					Minimum depth in each-1/4 width of channel entering from seaward Mid-channel			
Name of Channel	Date Survey	Project			Left outside quarter feet	Left inside quarter feet	Right inside quarter feet	Right outside quarter feet
		Feet width	Miles length	Feet depth				
Tybee Range--	6-58	500	1.64	30	30	31	28	23
Bloody Point--	6-58	500	2.81	30	30	30	29	25

ENG FORM 4020-R(Nov 90)

(b) For channels 100 to 400 feet wide (ENG FORM 4021-R).

HARBOR _____ (State) _____					Minimum depths in channel entering from seaward		
Name of Channel	Date Survey	Project			Left outside quarter feet	Mid- channel for half project	Right outside quarter feet
		Feet width	Miles length	Feet depth			
Kings Island Channel	6-58	300	1.14	26	24	23	26
Whitehall Channel	6-58	200	1.81	26	27	26	25

ENG FORM 4021-R(Nov 90)

(c) For channels less than 100 feet in width, report controlling depths only based on at least 80 percent of project width, 40 percent on either side of centerline. (The submission of tabular forms is not required for channels having a project depth less than 10 feet except coastal inlets and harbors of refuge.

(d) The tabulations of depths should be amplified by footnotes or otherwise to show clearly and definitely the location of controlling shoals, tendency of shoals to recur, and all other critical information of special value and importance for safe navigation of the channel. Reaches of channel not presently named should be identified in the tabular form by reference to charted aids or features, or assigned identifying names, numbers or letters. For localized irregular project areas where the application of the tabular form would not be practical, the controlling depth based on a safe navigable width will be described as well as unusual or critical conditions of shoaling.

h. Charts will be updated and re-published on a regular basis. Update intervals will be based on the nature of the waterway and extent of changes, but will not exceed every seven years.

i. A NTNI will be disseminated approximately six months in advance of availability of a revised chart edition.

2-6. Special Reports.

a. Changes affecting navigation will be made promptly whenever information of immediate concern to navigation becomes known. Refer to EP 1130-2-520 for the circumstances requiring special reports. Items of information especially desired are: (1) channel condition as revealed by surveys; (2) changes in channel conditions, either by natural causes or by dredging or other work; (3) changes in approved projects for improvement with statements of results expected from proposed-operations; (4) descriptions of proposed dredging or other Federal work of improvement such as breakwater, pier, and revetment construction or alterations; (5) descriptions of proposed or completed municipal or private improvements in or affecting navigable waters; (6) accidents or equipment failures at USACE locks and dams or along navigable waterways, that will result in closure of the lock or waterway for 24 hours or more, or will result in a significant impact to navigation. For item (6), district commanders are to forward an incident report to HQUSACE (CECW-OD) through their MSC office as soon as possible following the incident. Reporting of navigation incidents to CECW-OD is required even though the districts may be sending situation reports to the HQ Emergency Operations Center during natural disasters or more regional or localized events.

b. Additional items of information desired are: descriptions of wrecks; uncharted shoals, and other obstructions to navigation and particulars as to proposed or completed removal of same; changes in buoys or lights; erection of new, or changes in existing bridges; new or revised Federal or local rules and regulations for harbors and channels; establishment or existence of danger areas in navigable waters. Reproductions of drawings or sketches which will be helpful in interpreting the data shall accompany the reports. The reports will not be limited to a reference to an accompanying drawing or sketch, but will contain a complete description in form suitable for publication in notices to mariners and the monthly supplements to the U.S. Coast Pilot. In this respect, the reports will provide enough information that a single notification to navigational interests will suffice. In the case of dredging or construction work, the mere

statement that work will commence or has commenced on a certain date is insufficient. All additional information possible, such as probable duration of operations and object of work, will be given. In the case of dredging, extent of the area to be dredged and the depth expected will be provided. The reports required by this paragraph will be identified by reference to the appropriate engineer manual or regulation and will be numbered consecutively by each district during the calendar year, starting with number 1 at the beginning of each year.

c. Format.

(1) Charts will be prepared in booklet form, with separate booklets for each major waterway (e.g., Lower Mississippi River, McClellan-Kerr). Additionally, booklets may be prepared for sale by reach or pool.

(2) Page size will be suitable for navigational use, and may vary depending on scale and detail appropriate to the waterway.

d. Content. Each chart booklet will contain:

(1) A general section at the front including, at a minimum:

- (a) index
- (b) legend of chart symbols and abbreviations
- (c) general notes on waterway/chart usage
- (d) copy of relevant navigation regulations (33 CFR)
- (e) reference to USCG regulations for drawbridges
- (f) reference to USCG Light List for characteristics
- (g) chart availability information - address, cost
- (h) update information - method of publishing changes
- (i) date of next scheduled revision

(2) A graphic overview of the waterway, marked with rectangles to reference chart pages.

(3) Chart Pages, in conformance with "Charted features" and "Chart standards" below. (See Appendixes G and H.)

(4) Profile drawings for each bridge, lock/dam, and overhead crossing (except where a large number within a short distance makes this impractical to show) on the page opposite the relevant chart section. Profile drawings will include vertical and horizontal clearances for each bridge and overhead crossing, unless such clearances are identified beside the charted features. (See Appendix I.)

e. Charted features. Charts shall be drafted to depict necessary and useful features for navigation, avoiding excessive clutter with extraneous information. Each chart page will include the waterway name, scale, and direction of north. Charted features will include:

(1) Topography - shorelines (at selected datum), shoreline features, tributary rivers or creeks, location of cities and towns, selected railroads and highways. Levees and floodwalls significant to the USACE.

(2) Structures - lock/dams, bridges, overhead crossings (pipelines, power, communication lines), major shore structures (towers, tanks, radio towers, large buildings), docks and piers, selected waterfront facilities, mooring and protection cells. Sewage facilities and raw water intakes or outfalls.

(3) Obstructions and dangers - obstructions which are of a permanent or continuing nature (fixed location), including known wrecks and bars, pilings, submerged rocks, regulating structures (e.g., wing dams or dikes).

(4) Aids to navigation - navigation lights, daybeacons and daymarks (as established by the USCG and listed in the USCG Light List), permanent (lighted) buoys (as shown in the USCG Light List), and selected private aids to navigation (especially if lighted).

NOTE: Temporary (unlighted) buoys shall NOT be marked on charts, since their frequent change in number and position make them unreliable for establishing vessel position. Exception for pooled waters: unlighted buoys may be shown on charts, if accompanied (on each page where they are shown) with a special note that "Unlighted buoys are shown in common or typical locations, however their number and position are changed frequently where needed. The position of unlighted buoys shown on this chart should not be used by the navigator for locating his position."

(5) Other navigational information - sailing lines, river mileposts, river gages, direction of river flow (arrow).

(6) Limits and special operating areas - restricted areas submerged pipelines, submarine cable crossings, barge fleeting areas.

f. Chart Standards.

(1) A scale of 1"= 2000' will ordinarily be used, except where larger or smaller scale is more appropriate for the level of detail needed or size of area covered.

(2) Choice of colors should be consistent with NOAA Chart No. 1 colors. These colors have been tested and proven to work in all navigation conditions.

(3) Chart symbols will follow the U.S. standards as shown in NOAA Chart No. 1 and the USCG Light List. A copy of the more relevant symbols is provided in Appendix G.

(4) Lettering should be clear and consistent, using different size and/or type for different types of information. Lettering should generally be outside the channel area, if practicable.

(5) Abbreviations for light characteristics will conform to the USCG Light List.

(6) Level of detail for topography and structures (e.g., how many highways or buildings to show) will depend on how much detail there is to show within a reach, and how much is needed for general orientation. Excessive clutter should be avoided.

(7) Datum - Shorelines and obstructions which may be partially or occasionally submerged will be drawn at mean river stage. Vertical clearances will be shown with reference to stated elevation, river stage, or zero gage, as appropriate.

g. Distribution.

(1) Charts are provided to the industry and general public at a cost not less than the cost of printing/duplication.

(2) Charts will be provided free of charge (upon request) to other Federal agencies with operational requirements, and to other public service agencies such as local rescue squads or state conservation officers.

(3) Automatic distribution will include, at a minimum:

(a) HQUSACE (CECW-OD) - 2 copies

(b) Commandant (G-NSR-3) - 1 copy
U.S. Coast Guard
2100 Second Street SW
Washington, DC 20593-0001

(c) USCG District (see Appendix J for addresses) - copies for each office or unit with an operational interest for the area covered, including:

1. District Aids to Navigation Office
2. Aids to Navigation Units/Buoytenders
3. Marine Safety Offices

h. Corrections/Revisions. Significant changes or corrections to a chart will be published by means of a Notice to Navigation Interests. The Notice will provide sufficient detail to permit the chart users to correct the chart, or will provide an overlay for correction of the affected area on the chart. A separate request will be made for a Local Notice to Mariners, advising mariners where they can obtain the chart correction.

i. Conversion of existing charts. Existing charts will be revised to conform with these standards when the maximum update interval has been reached (seven years since the last edition), or when the nature and extent of changes require re-publication sooner than seven years.

j. Catalog of USACE Charts.

(1) Within 90 days of the publication date of this pamphlet, affected MSCs or districts shall submit to HQUSACE (CECW-OD) a copy of the most current chart for each waterway, price information for each chart, mailing address and phone number for requests from other agencies/public, and a schedule for publication of the next complete update.

(2) HQUSACE (CECW-OD) will maintain a current listing of all USACE charts, and will publish an annual catalog with information on cost, availability (source), and next planned update.

2-7. Information Pamphlets, Maps, Brochures and Other Material.

a. PL 85-480, approved 2 July 1958, authorizes the Commander, USACE to publish information pamphlets, maps, brochures, and other material on river and harbor, flood control, and other civil works activities, including related public park and recreation facilities that may be of value to the general public. This authority is limited to the facilities under jurisdiction of the Commander, USACE. Specific guidance on brochure format can be found in EP 310-1-6 Graphics Standards Manual. Brochure/pamphlet creation/revision should be in accordance with that manual and should be a coordinated effort including Operations, Public Affairs, and Information Management elements.

b. This public law authorizes the Commander, HQUSACE to provide for the sale of any material prepared under authority of the act of publications, charts, or other material prepared under direction of the Commander, HQUSACE pursuant to other legislative authorization or appropriation, and to charge therefor a sum of not less than the cost of reproduction.

c. District commanders are authorized to publish the material covered in paragraph 2-7a above, and to sell such material. Except for material specifically prepared for free distribution to the general public, the charges for such other published information will be not less than the cost of its reproduction.

d. Condition survey maps or charts, sold or otherwise distributed to the public, showing depths will specifically state the date or dates that the surveys were made. They shall also have the following notation printed or stamped thereon:

"The information depicted on this map represent the results of surveys made on the dates indicated and can only be considered as indicating the general conditions existing at that time."